

29th the temperatures were continuously high, reaching a maximum of 118° at some points, and exceeding by several degrees the highest temperatures ever previously recorded at a number of points.

The first 10 days were mainly warm and moderately dry, affording a welcome change from the cool, rainy conditions that had existed for practically the entire month of June over much of the eastern two-thirds of the country.

The week ending July 17 was mainly warmer than normal over the more western districts, but moderately cool over the central valleys and to the eastward, save over the extreme Northeastern States. Rainfall was well distributed and the week as a whole was unusually favorable for midsummer. The week ending July 24 was moderately warmer than normal in the central valleys and eastern districts and mainly cooler than normal in the mountain and plateau regions, but decidedly warm during the last few days in the far Northwest.

The last week was moderately cool over most districts from the Rocky Mountains eastward, save along the immediate Gulf and South Atlantic coasts, where it was slightly warmer than normal. West of the Rocky Mountains the week, as a whole, was mainly unusually warm, particularly in the far Northwestern States, where the weekly averages ranged from 6° to 12° above the normal, and the period of unusual continued heat was in numerous instances the longest of record.

The fairly frequent changes in temperature, though not of large magnitude, and the absence of continued excessive heat except in small areas, caused the month to be rated as physically comfortable in nearly all parts.

The average temperature for the month was close to normal in practically all portions, the only region having an excess of more than 3° being the northern portion of

the plateau, where the positive departures ranged up to as much as 5°.

The highest temperatures were widely scattered as to dates, but they were particularly high on the 25th and 26th in the plateau region. The highest temperature reported was 120° in southern California, and temperatures were above 95° at some time during the month locally in all the States.

Minimum temperatures were below freezing at exposed points in all the western Mountain States; the lowest, 20°, was recorded in the high mountains of Colorado.

PRECIPITATION

As in the case of temperature, the monthly precipitation was close to the normal in practically all districts, though a few stations in the northern Great Plains had the greatest July amounts of record. The falls were mainly well distributed through the month, and at the close no important agricultural areas were suffering from a serious lack of soil moisture.

RELATIVE HUMIDITY AND CLOUDINESS

The relative amount of moisture, like the other principal weather elements, was mainly close to the normal, principally slightly above, except in the Missouri Valley, where it was materially higher than normal. Over the Southwest a moderate deficiency was fairly general, and there were slight deficiencies in the Middle Atlantic States and locally in Texas.

Much clear weather prevailed in nearly all parts of the country, particularly in the central valleys and to the westward, and similar conditions prevailed in the lake region and Atlantic Coast States. Considerable cloudy weather prevailed in the Southeastern States and portions of Florida and extreme northeastern New England

SEVERE LOCAL STORMS, JULY, 1928

The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau.

Place	Date	Time	Width of path, yards ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Miller, S. Dak.....	1	8-9 p. m.	330	---	\$20,000	Tornado.....	Farm buildings destroyed.....	Official, U. S. Weather Bureau.
Huron, S. Dak.....	1	9 p. m.	3 mi.	---	10,000	Wind.....	Hangar and airplane destroyed; many buildings damaged.	Do.
Anoka, Minn. (north of).....	1	Midnight	---	---	100,000	Tornado.....	Extensive property damage reported.....	Do.
Brookings, S. Dak.....	1	---	---	---	10,000	Wind.....	Hangar and 1 airplane wrecked; some farm buildings damaged.	Do.
Minneapolis, Minn.....	1	---	---	---	60,000	Tornado.....	Much damage to property.....	Do.
Wisconsin (west-central and central).	2	12:30-2:30 a. m.	---	---	400,300	Severe squall; probably 2 small tornadoes.	Damage to barns, silos, stock, overhead wires, and crops in 7 counties.	Do.
Howard, Mitchell, and Winnebago Counties, Iowa.	2	---	---	---	---	Hail.....	Damage chiefly to crops.....	Do.
Minatare, Nebr.....	3	3 p. m.	3,520	---	5,000	do.....	Crops and gardens injured in places; path 3 miles.	Do.
Shelby County, Iowa.....	3	9 p. m.	---	---	---	Tornado.....	Crops and buildings damaged.....	Do.
Crawford County, Iowa.....	3	P. m.	---	---	17,000	do.....	Character of damage not reported.....	Do.
Iowa.....	3	do	---	---	---	Wind and hail.....	Considerable damage to crops and buildings over entire State.	Do.
Stark and Peoria Counties, Ill.	3	11 p. m.	12 mi.	---	20,000	Wind.....	Buildings damaged.....	Do.
Stratton, Nebr.....	3	P. m.	3 mi.	---	25,000	Hail.....	Crops damaged 10 to 90 per cent in places over path 5 miles long.	Do.
Nebraska (central).....	3-4	---	100 mi.	---	11,000	Wind.....	Small grain lodged; a few small buildings demolished, others damaged; path 100 miles.	Do.
College View, Nebr.....	4	1 a. m.	---	---	5,000	do.....	A business block and a residence unroofed; 2 garages demolished; trees uprooted.	Do.
Iowa.....	4	A. m.	---	---	---	Wind and hail.....	Heavy damage to crops and other property over entire State.	Do.
Wayne and Lenoir Counties, N. C.	4	5 p. m.	---	---	17,000	Hail.....	Considerable crop damage.....	Do.
Indianapolis, Ind., and vicinity.	4	---	---	---	---	Wind and rain.....	Trees and wire systems damaged; light and car service interrupted.	Do.
Elvaston, Bentley, Plymouth, and Colmar, Ill.	4	---	---	---	6,000	Wind.....	Property damaged over path 30 miles long.....	Do.
Lincoln, Ill. (near).....	4	---	1,320	---	6,000	do.....	Crops flattened.....	Do.
Massachusetts (east-central).	4	---	---	3	---	Gales.....	Much damage to property; a number of boats capsized; traffic jammed; light and telephone service crippled; several persons injured.	Boston Herald (Mass.).

¹ "Mi." signifies miles instead of yards.

Place	Date	Time	Width of path, yards ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Pittsburgh, Pa., and vicinity.	4					Wind, rain and electricity.	400 automobiles wrecked by landslides; 2,000 persons marooned by floods; small buildings damaged by lightning.	Official, U. S. Weather Bureau.
Washington County, Md. (northern).	4					Wind	Trees uprooted; telephone and electric wires broken.	Do.
Ramsey County, N. Dak.	5				\$25,000	Several small tornadoes.	Farm buildings and crops damaged.	Do.
Richville, N. Y.	5				25,000	Thundersquall.	Nearly all buildings damaged; trees and telephone lines blown down.	Do.
Evansville, Ind., and vicinity.	6	A. m.				Electrical, wind and rain.	Basements flooded; power lines broken; crops laid flat.	Do.
Scotts Bluff County, Nebr. (northern).	6	3 p. m.	880		20,000	Hail.	Crops badly injured.	Do.
Chattanooga, Tenn.	7	A. m.				Wind and rain.	Damage chiefly to wires and poles; crops and gardens injured.	Do.
Scott County, Kans.	7	7-9 p. m.	6-12 mi.		60,000	Hail.	Damage chiefly to growing crops; path 30 miles.	Do.
Iowa.	7	P. m.				Wind and hail.	Crops and buildings considerably damaged in 13 counties.	Do.
Nashville, Tenn.	7				2,000	Wind.	Windows broken; telephone and electric service crippled.	Do.
Portage, Langlade, and Oconto Counties, Wis.	8	4-5 p. m.			13,500	Severe squall.	Chief damage to farm property.	Do.
Eads, Colo.	8	6:30 p. m.	1,760			Hail.	Crops and gardens damaged.	Do.
Iowa.	8	P. m.				Wind and hail.	Considerable damage to crops and buildings in 8 counties.	Do.
Peru, N. Y.	9	2-5 p. m.	3 mi.		15,000	Hail.	Much damage to apple crop.	Do.
Phelps, Gosper, and Furnas Counties, Nebr.	9	3 p. m.	20 mi.			do.	Crops damaged 15 per cent to total in places over path 20 miles long.	Do.
Buffalo County, Nebr. (southern).	9	4 p. m.	3 mi.		75,000	do.	Crops severely damaged.	Do.
Colfax County, Nebr. (southern).	9	4:30 p. m.	3,520		60,000	do.	Heavy crop damage in places; path 10 miles.	Do.
Beaver City, Nebr. (near).	9	do.	5 mi.		10,000	do.	Severe damage to crops in small areas.	Do.
Harlan and Furnas Counties, Nebr.	9	5-6 p. m.	8 mi.		100,000	do.	Crop damaged 25 per cent to total.	Do.
Wayne and Dixon Counties, Nebr.	9	6:45 p. m.	1,760			do.	Crops damaged 5 to 50 per cent over path 8 miles long.	Do.
Iowa.	9	P. m.				Hail and wind.	Crops injured; many windows broken; livestock hurt in 6 counties.	Do.
Brunswick, Mo.	10	6:30 p. m.				Wind.	Buildings, trees, and crops damaged.	Do.
Benton, Appanoose, and Guthrie Counties, Iowa.	10					Wind and hail.	Damage mainly to crops.	Do.
Crawford and Bourbon Counties, Kans.	11	12:30 a. m.	25 mi.		10,000	Thunderstorm.	Buildings damaged; wire services crippled; path 40 miles.	Do.
Rushville, Nebr.	11	4 p. m.	4 mi.		100,000	Hail.	Crops beaten; buildings damaged; poultry killed; livestock injured; path 30 miles.	Do.
Scotts Bluff County, Nebr.	11	5 p. m.	3,520		100,000	do.	Extensive damage to crops; path 6 miles.	Do.
Frederick, Md.	11	P. m.			34,000	Wind and hail.	A number of buildings partly unroofed; windows blown in; trees uprooted; gardens damaged.	Do.
Dundee, N. Y. (near).	11					Thunderstorm and hail.	Trees and telephone lines considerably damaged; crops and orchards injured.	Do.
Franklin County, Pa.	11					Hail.	Heavy crop damage over narrow path.	Do.
Nevada and Lamonte, Mo.	11					Wind and hail.	Much damage to crops, buildings, greenhouses, and trees.	Do.
Washington County, Md. (northeastern).	11				50,000	Hail.	Orchards and raspberry plantations damaged; small animals killed; crops injured.	Do.
Spooner, Wis. (near).	12	1 p. m.	10 mi.		10,000	do.	Crops damaged.	Do.
La Crosse and Monroe Counties, Wis.	12	2:30 p. m.	3 mi.		50,000	Hail.	Crop loss heavy.	Do.
Roy, N. Mex. (near).	12	3 p. m.				do.	Wheat crop damaged about 50 per cent.	Do.
Iowa.	12	P. m.				Wind and hail.	Damage chiefly to crops in 14 counties.	Do.
Arvada, Wyo. (near).	17	do.				Hail.	Crops laid waste; livestock killed or injured.	Sheridan Post Enterprise (Wyo.)
Clarkelan, Wyo. (north of).	17					do.	All crops in 4 sections destroyed; small animals killed.	Official, U. S. Weather Bureau.
Clarkelan, Wyo. (12 miles north of).	18		7 mi.			do.	Crops on 45 farms ruined; hogs and chickens killed.	Do.
Monroe County, Iowa.	19	6 a. m.			1,000	Tornado.	Buildings damaged.	Do.
Aurora, Ill.	19	11:30 a. m.				Wind, electrical, and hail.	Trees and buildings damaged; car and wire services interrupted; crops flattened.	Do.
Iowa.	19	P. m.				Wind, hail, and floods.	Much injury to crops; some damage to buildings in 6 counties.	Do.
Do.	20	A. m.				do.	Extensive crop injury; some damage to buildings in 5 counties.	Do.
Blunt to Lane, S. Dak.	20	5-7:30 p. m.	3 mi.		145,000	Hail and wind.	Extensive property damage.	Do.
Aspermont, Tex. (near).	20	6 p. m.	400			Probably tornado.	4 small buildings demolished; considerable crop damage; 1 person injured.	Do.
Gannvalley to Mount Vernon, S. Dak.	20	6:30 p. m.	4 mi.		133,000	Hail and wind.	Crops destroyed; buildings damaged.	Do.
Canon City, Colo.	20	P. m.			100,000	Hail.	Orchards and crops ruined.	Do.
Mifflintown, Pa. (near).	20	do.				Small tornado.	A barn demolished; many trees uprooted.	Do.
Greentown, Ind.	20					Tornadoic wind.	Corn and oats damaged.	Do.
Ross, Wyo. (near).	20					Hail.	80 acres of oats shattered; other fields partial to total loss.	Do.
Fort Wayne, Ind.	21				75,000	Severe thunderstorm.	Severe damage to buildings.	Do.
Kokomo, Ind. (near).	21				50,000	do.	Heavy crop loss.	Do.
Carlisle, Pa., and vicinity.	22	2:30 p. m.	1,000		25,000	Hail and wind.	Damage confined to roofs; windows, etc.; some crop injury.	Do.
Morgantown, Md. (near).	22	5:30 p. m.		1	10,000	Probably tornado.	Several small buildings demolished; 1 person injured.	Do.
Steuben County, N. Y.	23	4:30 p. m.				Hail and thunderstorm.	Many vineyards ruined; crops, highways, and cottages damaged.	Do.
Scotts Bluff County, Nebr.	24	3 p. m.	6 mi.		50,000	Hail.	Damage chiefly to crops.	Do.
Cedarvale, N. Mex.	24	3-4 p. m.	3,520			do.	Crops almost a total loss.	Do.
Iowa.	26	P. m.				Hail and wind.	Crops damaged considerably in 17 counties.	Do.
Minstare, Nebr.	27	2 a. m.	7 mi.		19,700	Hail.	Beets, gardens, and small grains damaged.	Do.
Ault, Colo.	28		1,760			do.	Crop loss about 50 per cent.	Do.
Decatur and Thomas Counties, Kans.	29	8 p. m.	10 mi.		50,000	do.	Much crop damage over patch 30 miles long.	Do.
Plainfield, Wis. (near).	30-31				3,500	2 hail storms.	Growing crops hurt.	Do.